Title : COMPARISON OF HALOTHANE VS DROPERIDOL-FENTANYL IN TRAUMATIC SHOCK

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Anesthetic agents may influence survival following hemorrhagic shock and surgery. This present study was undertaken to compare the effect of halothane and droperidol-fentanyl (D-F) on mortality and rate of complications after traumatic shock.

Methods and Materials. During the past 1-1/2 years, 87 blunt trauma patients were selected and studied. Criteria for inclusion in this study were (1) systolic blood pressure (SBP) <90 torr on admission or during resuscitation; (2) patients undergoing laparotomy, thoracotomy or major vessel repair. Because severe head injury requiring craniotomy was a common cause of death independent of anesthetic agents, these patients were excluded as were patients not able to be stabilized prior to induction of anesthesia because of uncontrollable bleeding. Patients were divided into two groups: Group I patients who were admitted on odd-numbered days and received halothane N_2O-O_2 anesthesia and Group II admitted on even-numbered days received D-F N_2O-O_2 anesthesia. Pancuronium was administered for muscle relaxation in all patients. Patients were monitored with central venous (CVP) and arterial cannulae, electrocardiogram, arterial blood gases, urine flow and analysis. Intraoperative creatinine (C_{Cr}) and free water (C_{H_2O}) clearance was calculated. Postoperatively, patients were followed with daily blood urea nitrogen, blood gases, daily chest x-ray, urine flow rate and analysis. Comparison was made of intraoperative renal clearance, intraoperative and postoperative death rate and postoperative complication rate. The protocol for this study was approved by the Research and Human Volunteers Committees.

Results. There were 44 patients in Group I and 43 in Group II. There were no differences in age, sex, admission blood pressure (BP), blood and fluid volume administered for resuscitation or resuscitation time.

Table 1: Preoperative Data

	Group I	Group II
Age (yrs)	30 ± 13.5	31 ± 15.0
Admission SBP Torr	60 ± 36	66 ± 27
Packed cell units transfused before anesthesia	6.2 ± 5.5	5.8 ± 4.4

Values: Mean ± Standard Deviation

There were no significant differences in site and number of surgical procedures, intraoperative vital signs, renal clearances, blood transfused and base deficit. Abrupt BP changes were more frequent in Group II patients who showed a higher intraoperative death rate.

Table 2: Intraoperative Data

	Group I	Group II
Lowest mean BP, Torr	72 ± 15	76 ± 16
CVP, Torr	16 ± 6	16 ± 4
Packed cell units, transfused	13.4 ± 11	11.2 ± 12
C_{Cr} ml/min	101 ± 6.9	86 ± 61
Base deficit after surgery	-0.7 ± 4.0	-2.4 ± 4.0
Operating room death	2	7

Postoperative complications, including renal, respiratory, hepatic and multiple organ failure and death, were more frequent in Group II. This difference (Table 3) was significant ($P < 0.05$, X^2 score 9.37)

Table 3: Contingency Table

	Group I	Group II
Intraoperative death	2	7
No postoperative complication	24	10
Survived with complication	7	12
Postoperative death	11	14
TOTAL	44	43

There were no significant differences in mechanical ventilation time and hospital stay in surviving patients.

Discussion. Mortality in traumatic and hemorrhagic shock increases with persistent vasoconstriction and increased sympathetic activity. D-F has been reported to afford protection against hemorrhagic shock,[1] although others noted that longer survival was observed in dogs inhaling halothane.[2] These results suggest that halothane and D-F maintain tissue perfusion in hemorrhagic shock. Despite this reported usefulness of D-F, we found it inferior to halothane as judged by death and complication rates. Whether this difference was due to a pharmacological action cannot be determined by this study. During inhalation of halothane hypovolemia is commonly associated with a fall in BP and diagnosis and treatment with volume replacement is more rapid. In Group II abrupt changes in BP may reflect the intermittent dosage of D-F which could allow persistence of sympathetic discharge and vasoconstriction.

Conclusion. In severe traumatic shock death and complication rate was lower in patients who received halothane anesthesia compared to those receiving droperidol-fentanyl anesthesia.

References.

1. Corssen G, Chodoff P: Clinical Anesthesia. Philadelphia, F.A. Davis Company, 1965, pp. 138-149
2. Theye RA, Perry LB, Brzica SM: Influence of anesthetic agent on response to hemorrhage hypotension. Anes. 40:32-40, 1974.